

## Request for Proposal

### Solutions to reduce Post-Harvest Loss experienced by Smallholder Farmers

November 2023

## Context

### Shell Foundation

Shell Foundation (SF) is a registered charity, founded by Shell in 2000, that exists to support people living in low-income communities to escape poverty and ease hardship. SF creates and scales business solutions to enhance access to energy and affordable transport to achieve this mission.

### Background

Globally, an estimated 1.3 billion tons or one-third of the world's food is lost before it is consumed. Of this, 15.3% is lost on the farm. This is particularly devastating for the almost 500 million SHFs whose livelihood relies on the agricultural value chain where post-harvest loss reduces their incomes by at least 15%<sup>1</sup>. Many of these SHFs live in rural areas, with most of them lacking reliable energy access.

Energy is needed by these farmers not only in the primary production for irrigation and harvesting, but also for processing, storage, preservation, transportation, and distribution. Thus, reducing food and post-harvest loss experienced by SHFs calls for a greater use of energy for storage, processing, and transportation in sustainable, efficient, and cost-effective ways.

The sustainable and climate-safe way to meet the growing demand of energy across the agri-food sector is through efficient renewable energy technologies. Distributed Renewable Energy (DRE) solutions can play a key role in reducing post-harvest losses experienced by farmers. The solutions will result in increased incomes, lower loss, and greater climate resilience.

Despite the growth in the number of available DRE solutions, many of the technologies favour commercial farmers because SHFs cannot afford them. Existing solutions (e.g., cold storage units) are often too expensive. Thus, to increase the adoption of DRE solutions and reduce the trend of food losses among SHFs, it is important to develop solutions that are affordable (low-cost, practical, and scalable) for them.

## Objectives

SF would like to commission research that identifies which value chains in Kenya, India, Nigeria experiences the most food loss – and where the impact is directly felt by SHF. The research should also explore what type of low-cost, practical, and scalable solutions exist that can address the energy needs of these farmers towards reducing post-harvest loss. We aim to deliver this research across the 3 countries of Kenya, India, and Nigeria.

High-level research objectives are to:

- Understand which crop value chains are most exposed to food loss, which value chains make more sense to increase the shelf life of the produce, which does it make sense to just sell quick and get to market, and which does it make sense to process into a higher value produce.
- To identify which solutions (either no energy or renewable energy) can address for post-harvest loss for smallholder farmers across these 3 markets. The various solutions should be assessed on their performance, cost, economics, business model viability and gender impact.

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<sup>1</sup> Rockefeller Foundation

The specific research questions would be defined during the planning phase by the consultant/research organisation, but at a high level would seek to address the following:

- **What value chains are most affected by food loss and where is the impact most felt for SHFs across the 3 countries?**
  - Which value chains have the highest/lowest perishability?
  - Which value chains have the highest/lowest value?
  - How do these two characteristics interact, e.g., in a 2x2 matrix?
  - How does the perishability affect the market value of the produce?
- **Which solutions exist that require or reduce energy, will be the best to reduce food loss experienced by SHFs across the 3 countries?**
- **What are the most affordable solutions for SHFs to reduce food loss across the 3 countries?**

**NOTE:**

1. The SHFs to be considered earn less than the living income of their respective countries (India - \$8.7/day, Kenya - \$13.5/day, Nigeria - \$15.2/day). As a result, the solutions must be affordable to farmers.
2. The prospective solutions can be at any stage in its life cycle. However, it is important that it must have the ability to be commercialised within 3 years.
3. The top 10 crop value chains where the food loss percentage is high can be considered for this research.

## Target Audience

This research will be used by the portfolio team at Shell Foundation to inform their investment decisions in post-harvest loss. It will also provide insights to stakeholders to effectively understand prevalent value chains (used by SHF in the selected countries) and identify low-cost renewable energy solutions that can be used by these farmers to reduce post-harvest loss.

## Methodology

The research will be split into two parts. The first part of the research will be done to address the first objective. This will leverage a combination of secondary (desktop) and primary research to identify the top 10 value chains with high post-harvest loss across the 3 countries and where the impact is most felt by SHFs. Key informant interviews should also be conducted with sector specialists in each of the three countries to supplement the desktop research. The researcher will be responsible for identifying the relevant sources to be reviewed as well as the appropriate key informants to interview.

The second part will see the research consultant issue an RFP to identify technologies and solutions that can be used to reduce food loss for the identified value chains. The researcher would be expected to evaluate the submitted proposals from a techno-economic analysis, cost, impact and gender perspective, and a set of criteria for evaluation will be developed and submitted to the SF research manager as a deliverable. Based on the evaluation criteria, the researcher will need to select the technologies with the highest potential for addressing food and post-harvest loss, where the technology with the highest potential for impact will be awarded a prize (USD \$50,000)

**Note:**

- It is expected that the researcher(s) will develop a detailed methodology for data collection, data management and analysis in their proposal to answer the Research Questions. This methodology should be in direct response to the Research Questions.
- We are looking for innovations and solutions that incorporates those that we may not ordinarily come across within the sector. It is expected that the search for solutions should be expansive. We expect the RFP should be sent to a broad range of stakeholders (e.g. innovators, social enterprises, research agencies, academic institutions, corporates etc).

- RFP for solutions (using renewable energy or no energy) addressing post-harvest loss for low-income smallholder farmers should include a prize to incentivize applicants responding to it.
- For a gender perspective, the researcher should look to assess the solutions based on its benefits to women.

## Deliverables

The expected key deliverables for this project would be 2 high-quality written reports. The first report will be a response to the 1<sup>st</sup> objective of this research which seeks to address what value chains are most affected by post-harvest loss and where the impact is most felt by SHFs across the 3 countries.

The second report, on the other hand, will focus on all the solutions and assessment of them, and suggested recommendations for different value chains. The report will also answer the questions:

- What solutions exist that require or reduce energy will be the best to reduce food loss experienced by SHFs across the 3 countries?
- What are the most affordable solutions for SHFs to reduce food loss across the 3 countries?

The exact format and length would depend on the findings, but we expect the finished outputs to be robust enough to be reviewed by a group of sector experts and be considered rigorous enough to have moved the field forward.

An additional deliverable will be the draft RFP used to identify potential solutions (either no energy or renewable energy) to the issue of food and post-harvest loss. It should also include how the RFP will be marketed and which audiences will be targeted.

Proposals will be assessed based on a combination of the methodology, in-country experience of the team, experience in conducting research on SHF and cost.

The Ideal Candidate will:

- Need to have commercial acumen required to assess proposals.
- Have an excellent understanding of the needs of Smallholder Farmers.
- Experience in assessing technologies, innovations, and business models.
- Possess the skillset to perform impact, cost, and performance assessments on solutions.
- An ability to promote the RFP in a range of networks and experience in running an RFP.

This research project is expected to be conducted over a 6-month period, beginning in December 2023 /January 2024.

## Next Steps

If you are interested, please submit a proposal explaining how you would approach this work to **Habib Nuhu** ([Habib.Nuhu@shellfoundation.org](mailto:Habib.Nuhu@shellfoundation.org)) **on or before the 6<sup>th</sup> of December 2023**. Please ensure that you include:

- A summary of your methodology
- Your specific ideas with relation to:
  - How you would produce high-quality outputs for the project
  - How you would ensure that the output from this work is action-oriented and relevant for our target audience
  - What you would bring to this work that no-one else would

- Please share ideas on dissemination, follow-up conversations and how to spur broader conversations on the research and sector more broadly. How could you support or facilitate this
- Any examples of similar or parallel work that you have carried out in the past, including examples of consumer research/impact evaluations with a gender lens.
- Team profiles of the team that will work on this project, with links to their past work in this field, if available.
- Details on how you will facilitate data collection and how you will facilitate the RFP process for solutions (using renewable energy or no energy) addressing post-harvest loss for low-income smallholder farmers.
- A proposed budget and payment schedule of the research in USD.

Note: All Intellectual property generated from this research will belong to the Shell Foundation.